SLOVENSKI STANDARD
oSIST prEN IEC 63203-204-1:2022

01-junij-2022

Nosljive elektronske naprave in tehnologije - 204-1. del: Elektronski tekstil - Preskusna metoda za ocenjevanje pralne vzdržljivosti e-tekstilnih izdelkov

Wearable electronic devices and technologies - Part 204-1: Electronic textile - Test method for assessing washing durability of e-textile products

Tragbare elektronische Geräte und Technologien - Teil 204-1: Elektronische Textilien - Prüfverfahren zur Beurteilung der Waschbeständigkeit von E-Textiliensystemen der Freizeit- und Sportbekleidung

Technologies et dispositifs électroniques prêts-à-porter - Partie 204-1 : Textile électronique - Méthode d'essai pour l'évaluation de la durabilité au lavage des produits e-textiles

Ta slovenski standard je istoveten z: **prEN IEC 63203-204-1:2022**

ICS:

59.080.80	Inteligentne tekstilije	Smart textiles

oSIST prEN IEC 63203-204-1:2022 **en**

124/177/CDV

COMMITTEE DRAFT FOR VOTE (CDV)

PROJECT NUMBER:	
IEC 63203-204-1 ED2	
DATE OF CIRCULATION:	CLOSING DATE FOR VOTING:
2022-04-22	**2022-07-15**
SUPERSEDES DOCUMENTS:	
124/174/RR	

IEC TC 124 : WEARABLE ELECTRONIC DEVICES AND TECHNOLOGIES

SECRETARIAT:	SECRETARY:
Korea, Republic of	Mr Jae Yeong Park
OF INTEREST TO THE FOLLOWING COMMITTEES:	PROPOSED HORIZONTAL STANDARD: ☐
	Other TC/SCs are requested to indicate their interest, if any, in this CDV to the secretary.

FUNCTIONS CONCERNED:

☐ EMC ☐ ENVIRONMENT ☐ QUALITY ASSURANCE ☐ SAFETY

☒ SUBMITTED FOR CENELEC PARALLEL VOTING ☐ NOT SUBMITTED FOR CENELEC PARALLEL VOTING

Attention IEC-CENELEC parallel voting

The attention of IEC National Committees, members of CENELEC, is drawn to the fact that this Committee Draft for Vote (CDV) is submitted for parallel voting.

The CENELEC members are invited to vote through the CENELEC online voting system.

This document is still under study and subject to change. It should not be used for reference purposes.

Recipients of this document are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

TITLE:

Wearable electronic devices and technologies - Part 204-1: Electronic textile - Test method for assessing washing durability of e-textile products

PROPOSED STABILITY DATE: 2027

NOTE FROM TC/SC OFFICERS:

WG 2 maintenance team agreed to delete the ‘leisurewear and sportswear’ from the title and scope at the meeting on 2021-11-05.

TC 124 officers also agreed to the change of title and scope because the change does not require substantial technical changes.

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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WEARABLE ELECTRONIC DEVICES AND TECHNOLOGIES –

Part 204-1: Electronic textile – Test method for assessing washing durability of e-textile products

FOREWORD

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International Standard IEC 63203-204-1 has been prepared by IEC technical committee 124: Wearable electronic devices and technologies.

The text of this International Standard is based on the following documents:

FDIS	Report on voting
124/xxx/FDIS	124/xxx/RVD

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts in the IEC 63203 series, published under the general title *Wearable electronic devices and technologies*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

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WEARABLE ELECTRONIC DEVICES AND TECHNOLOGIES –

Part 204-1: Electronic textile – Test method for assessing washing durability of e-textile products

1 Scope

This document specifies a household washing durability test method for e-textile products. This document includes testing procedures for e-textile products with electrical conductive components and sensors to collect the data of the user.

This document does not cover safety or heat-generation test methods. Products containing other components than those listed in this clause are not covered by this document.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 139, *Textiles – Standard atmospheres for conditioning and testing*

ISO 6330, *Textiles – Domestic washing and drying procedures for textile testing*

EN 16812:2016, *Textiles and textile products – Electrically conductive textiles – Determination of the linear electrical resistance of conductive tracks*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

3.1
e-textile product
product made from textiles and integrated electronics that together perform one or more functions

3.2
washing procedure
cycle of the washing action including water supplying, washing, and repeated rinsing, spinning and water supplying and ended by spinning as predetermined on the washing machine

4 Test method – General

4.1 Checklist before washability test

Check the product as described in the user manual and confirm the proper operation according to the instructions in the manual. (If the product contains areas of non-isolated conductive textile, resistance measurement according to EN 16812 could be conducted additionally). Then, measure the resistance and mark the measurement point, so that the same point can be measured after each washability test. Since the shape of the product varies, select the appropriate method to measure the resistance. The method of measuring conductive track resistance should be decided between the manufacturer and the user.

4.2 Washability test conditions

The washing test shall comply with the test procedure in ISO 6330. ISO 6330 offers various test procedures. E-textile products contain a unit that connects the modules and conductive track because of the nature of the product. Therefore, the inclusion of a hand-washing condition in the procedure is considered appropriate because it causes less damage to the product.

Conditions for washing the e-textile products are given as follows in this Subclause 4.2 and in 4.3.

The type of washing machine, detergent, washing method, drying method and number of repetitions are selected from methods standardized based on the manufacturer's designated care label. If not specified, the washing machine type is an ISO 6330 reference washing machine Type A, the washing procedure is 4H, and the drying method is procedure A – line dry.

If there is an agreement between the user and the supplier to apply the washing conditions as specified in another international standard, those alternative washing conditions shall be applied instead of those specified in this Subclause 4.2.

4.3 Check of operation before/after washing test

It is necessary to check the operation of the e-textile product under test after repeated washing and drying of the product in accordance with the test conditions. According to the procedure to check the operation status before washing in accordance with the user manual, double-check the operation status after washing and measure the resistance of the conductive textile to determine whether there is any disconnection (see Annex A-informative).

5 Test procedure

5.1 Pretreatment

The specimens shall be stored for at least 24 h in standard atmosphere conditions ((20.0 ± 2.0) °C and (65.0 ± 4.0) % relative humidity(RH) in accordance with ISO 139). Start operating the product in the manner specified in the user manual. The product shall be checked to ensure it is operating normally, and that it functions in accordance with the user manual. If the features don't work as described, report malfunction. All detachable components (e.g. connection module or batteries) shall be detached before washing. All embedded components shall remain on the product during wash testing.

5.2 Washing

Washing and drying the specimens in accordance with one of the procedures specified in ISO 6330, following the manufacturer's designated care label.

5.3 Test after washing and drying

After the e-textile products have been processed with washing and drying, prepare to check the performance of the product. Check the operation status and function of the product according to the specified order in the user manual (see example in Figure 1).

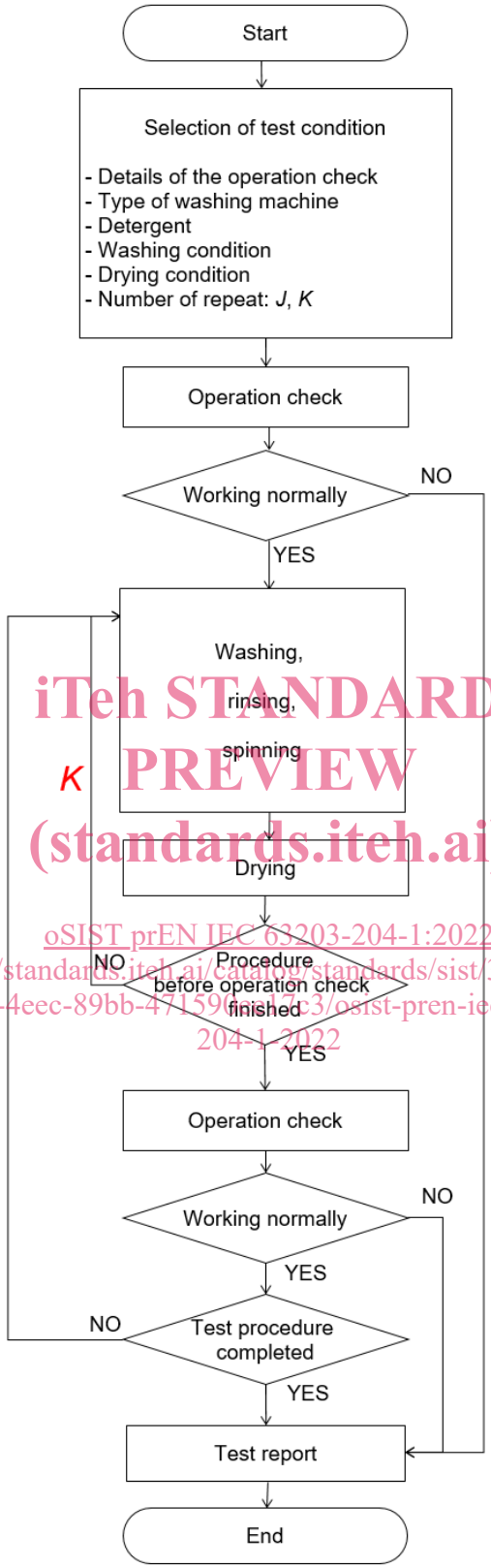

Figure 1 – Flow chart of test procedure

The number of repeats *K* is determined by the agreement between the manufacturer and the user. Unless otherwise agreed, *K* = 0.

The number of repeats *J* is the number of times until one of the following conditions is reached.

a) When the function of e-textile products is lost in operation check

b) When the conductive track is broken

c) When the number of times agreed in advance between the manufacturer and the user is reached

6 Test report

The test reports of every test based on this document shall contain the following information:

a) number and year of publication of this document;
b) product, intended use and type of (detachable) components to the test report;
c) operation status of the product in accordance with the user manual;
d) care label instructions (if applicable);
e) washing and drying method, the number of washes, number of repeat *K*;
f) electrical resistance after laundering (if applicable);
g) electrical resistance, measurement dimensions and measurement method;
h) operation status of the product in accordance with the user manual after the product has been washed.
i) number of repeat *J*